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MODELLING IN PUBLIC SCHOOLS

WALTER SARGENT

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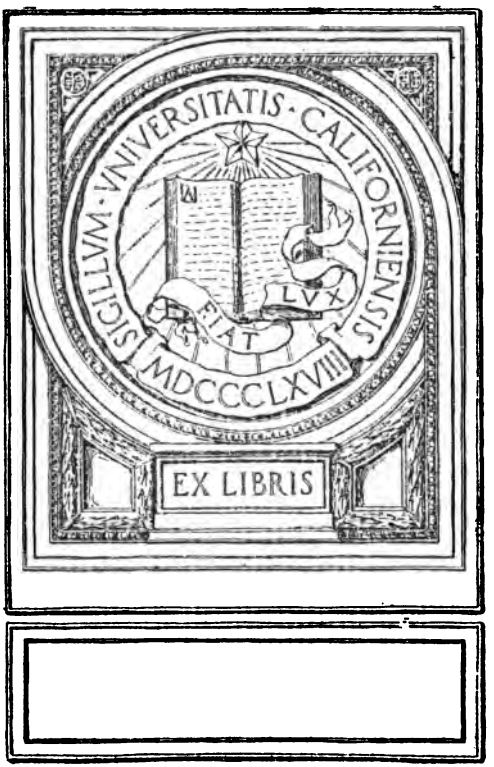
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Frontispiece

MODELLING IN PUBLIC SCHOOLS

BY

WALTER SARGENT

DIRECTOR OF DRAWING AND MANUAL TRAINING IN BOSTON PUBLIC SCHOOLS

UNIV. OF CALIFORNIA

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INTRODUCTION

AMONG the manual occupations which are of value in training the mind to think definitely in terms of form, and the hands to express readily the ideas of the mind, modelling in plastic material is one of the most effective.

Boy Modelling.

A clear understanding of form lies at the foundation of progress in most of the fine and industrial arts. This understanding is gained most surely and quickly when the student shapes form with his own hands. This knowledge develops power to draw because it gives the sense of construction which must exist if a drawing in two dimensions is to represent an object which exists in three.

Modelling in the round is representation in three dimensions and closely related to the actual object. It naturally precedes drawing, which is representation of three dimensions in terms of only two. Modelling, therefore, is the most effective training known for developing ability to understand and delineate form. Modelling in the round is drawing in three dimensions. Young children who at first show no aptitude or liking for drawing usually undertake modelling with confidence and enthusiasm. Later they can trans-

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late the round into bas-relief and this affords a natural step between modelling in the round and drawing upon paper. For example, a boy who cannot draw an Indian canoe from a small model can usually shape one in the round and then in relief. After these steps he can almost always draw it with fair success.

Modelling aids constructive work by developing ability to visualize forms and to see in imagination the finished whole which must be conceived more or less completely before working drawings and plans are made.

Modelling has the great advantage of requiring the use of both hands at the same time. Thus the right and left hand, continually used together, become almost equally skilful in shaping forms. This symmetrical development is valuable.

No efforts are required to awaken the interest of the children in modelling, for it appeals to a universal constructive instinct. Plastic material is responsive and the effect of each touch is immediately apparent. It therefore appeals to the youngest children as strongly as to those who are more mature.

EQUIPMENT

NOTWITHSTANDING its recognized value, modelling has not been so widely adopted in schools as its advantages would seem to justify. This is partly because clay, the most available material, requires so much attention and equipment to keep it in workable condition. The new plastic materials now obtainable are always ready for use and promise to make modelling possible in schools where the use of clay is out of the question. Equipment and time required for preparation are reduced to the minimum and frequent lessons are possible.

The initial cost of manufactured plastic materials is much greater than that of clay, but these materials if given proper care are practically indestructible and always ready for use. Most of these lay claim to trustworthy testimonials to the effect that they are antiseptic and that no danger arises from repeated use. From two to five pounds are sufficient to supply a room of thirty-five children. The amount necessary depends somewhat on the age of the children, less being required for younger pupils than for older.

Modelling material may be kept in a lump, and cut into the necessary number of pieces with a knife. It may then be distributed and used directly upon the desk top without harm to the desk if the top is

thoroughly wiped with a cloth afterwards. This way of using it is especially adapted for primary grades.

In these grades, there is little desire on the part of the children to keep the results or to work for more than one period on a single piece of modelling. The interest in the work arises from the manual activity exercised in moulding the forms.

In the upper grades where it is desirable to spend several periods on one problem it is necessary to provide small boards on which work may be kept. Boards 9½ x 12½ inches painted gray or varnished, are most serviceable. The oiled cardboard manufactured for this purpose is also excellent. Unpainted boards or unprepared cardboards should not be used, as they are likely to absorb the medium with which the material is mixed and soon make it dry and difficult to handle. The boards may be piled one upon another in the closet with a little modelling material at the corners to keep them apart and protect the work. The most convenient means of storage, however, is a case with side strips on which to slide the boards into place. If modelling is carried on during only a part of the year, the case may be moved into another building when work in one place is finished. Thus one equipment may be made to serve two or three buildings. If a few extra boards are provided some of the best work may be kept for exhibition. Usually some one can be found who will cast in plaster a few of the best specimens of modelling. Two or three children in upper grades may be shown how to do casting, and soon become sufficiently proficient to be allowed to take examples of work home and make the plaster

casts there. For directions for making simple plaster casts, see page 28.

The pupil's fingers are the best tools for most of the work. A simple wooden modelling tool, pointed at one end and flat at the other, may be easily whittled out and will serve for nearly all work which cannot be done with the fingers.

A tool with a wire loop in the end is also valuable. Fig. 1.

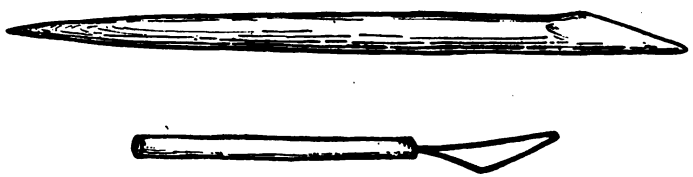

FIG. 1. — Modelling Tools.

PLAN OF WORK

PRIMARY GRADES. — First to third year in school. For occupational work in lower grades, modelling is especially valuable. The children seldom tire of it. Their enthusiasm grows with experience. Both imagination and expression are stimulated. While children model, following their own fancies, their ideas, instead of being exhausted, develop new activity.

Small children usually become tired of any one occupation after a few minutes. The opposite is almost always true when they are working with plastic material. Even at the end of lengthy periods their requests are likely to be for more material in order that they may make more things.

Most courses in modelling are based on the idea that children should commence with abstract type forms, such as the sphere, cylinder and cube and their subdivisions, and proceed gradually from these to the more complex forms of nature and ornament whose shapes are suggested by these types. The advantages of the possibility which such an orderly series of steps offers to the teacher, for working out a logical system, are offset by the fact that such an order is contrary to the progress of the mental development of children. For them a hemisphere is not as simple as a bird's nest because the idea of a bird's nest comes first. Moreover, plastic material modelled with the fingers is not an appropriate medium for the expression of that geometric accuracy which is the main characteristic of type forms. Type forms are abstractions and the interest of children in them does not last long after they have been seen and identified. Their interests are in things with which they deal in daily experience in a practical way, and their enthusiasm is put forth in representing such things. In general the development of the interest of young children in handling plastic material seems to be along the following lines:

1. Interest in seeing the material change form and take shape in response to the touch of their fingers.

2. Interest in expressing what is in their minds, using so many of the facts of appearance as will symbolize what they wish to express.

3. Interest in representing correctly the appearance of a particular object.

On the basis of this order, free work, in doing

which children are allowed to make what they choose, is perhaps the best possible way to begin modelling. After the material has been distributed for the first time, it is sometimes necessary for the teacher to shape a few things familiar to the children, such as a house, a bird, a nest, etc. Before she has finished more than one or two she is likely to find that the children have ceased to observe her and are busy with their own creations. From suggestions which one receives from another they will often shape an endless variety of things. At other times when each is intent on his own idea, the same object will be reproduced many times, and the result will be a row of birds or trees or houses, etc.

When the children have had some practice in this spontaneous exercise, and have gained a little facility in shaping the material, they delight in it as a new means of expression by which they can present some of their ideas more adequately and effectively than by words. After this, the work can easily and naturally be directed along the line of definite progress toward keener observation and more accurate recording of forms, characteristics and textures. The following suggestions relate to work during the first three years in school.

Small children have confidence to undertake the representation of almost anything that is suggested to them if it has entered at all vividly into their experiences. Therefore subjects should be selected because of the definiteness of the impression they have made on the child's mind rather than on account of geometric simplicity of form. For example, a loco-

motive or an automobile is a simpler subject for a child to model than is a hemisphere or square pyramid. The following are some of the things spontaneously attempted by a group of children five and six years of age, who were given material and allowed to model what they wished: men, children, birds, birds' nests, trees, houses, baskets, wagons, steam rollers, dogs, cats, people in action, etc. The results were crude, but they showed that the natural desire of these children was to express what was of most interest to them at the time. Such a starting-point offers opportunities for selection and study of topics which already possess the incentive of interest, and leads readily to close observation and increasingly accurate expression.

The following subjects for lessons are suggested for the first three years in school. Such a list may be covered the first year and repeated in each of the other two years, with better results from each new presentation.

A SUGGESTIVE LIST OF TOPICS

I. Free expression of whatever the children wish, in order to develop familiarity with the material, and facility in handling and shaping it.

II. Subjects from nature and from pictures: animals, birds, trees, fruits, flowers, etc. Small children appear to develop ability to represent such subjects rapidly when they model from memory, with occasional reference to the objects and to pictures of them, and to the best work of other pupils. After the first year, pupils should work for several lessons on some one

animal or bird, studying it in different ways; for example, a mouse or rabbit.

1. See the animal or a good cast or picture. Model from memory, compare with the original, see what the others have done, and try again.

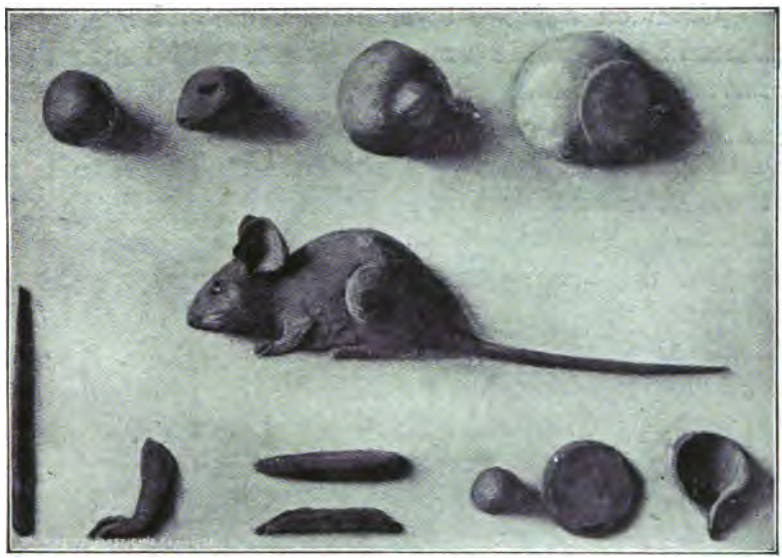

FIG. 2. — The Mouse.

2. Study particularly some detail, as the head and ears, model the whole, trying to make a better representation of the part studied. Compare with the original. Observe other parts, see what others in the class have done, and model again.

3. A demonstration lesson in which the teacher builds up a form step by step in full view of the children, and they follow, reproducing each step as it is shown them. (Fig. 2.)

4. Represent some action of the animal, as eating or running, or represent a group of two or three together. This repetition of a topic till it is well understood, and where each lesson presents some new element of interest, is especially valuable for the children after the first year.

Common objects, toys, houses, carts, boats, etc., should be studied in a manner similar to that suggested for nature forms.

III. Illustrative topics, games, occupations, incidents, etc. The children should be allowed to talk these over as they work. From their descriptions it will be seen that every shape they make has a meaning for them, however unintelligible it may appear to others.

It is of the greatest importance that the results obtained by young children should be judged by an appropriate standard. In the beginning, facility in expressing ideas, even though the results are crude and inaccurate, is of more value than the correct reproduction of given forms. The latter should be encouraged, however. Under the right guidance, the child's interest will be transferred from mere activity in production to the quality of the thing produced. It should be remembered, however, that this transference is as much the natural outcome of increasing maturity as it is the fruit of skilful teaching. Both factors are necessary and the desired results should not be expected too soon. Each year the children should learn by repeated exercises and study to model a few things well. Such things constitute an increasing vocabulary of forms which can be used and which

add to the study of new forms the confidence attained by past success.

Modelling is drawing in three dimensions and the best results often come when modelling and drawing proceed together. When children in the modelling class shape in the round what they afterwards draw,

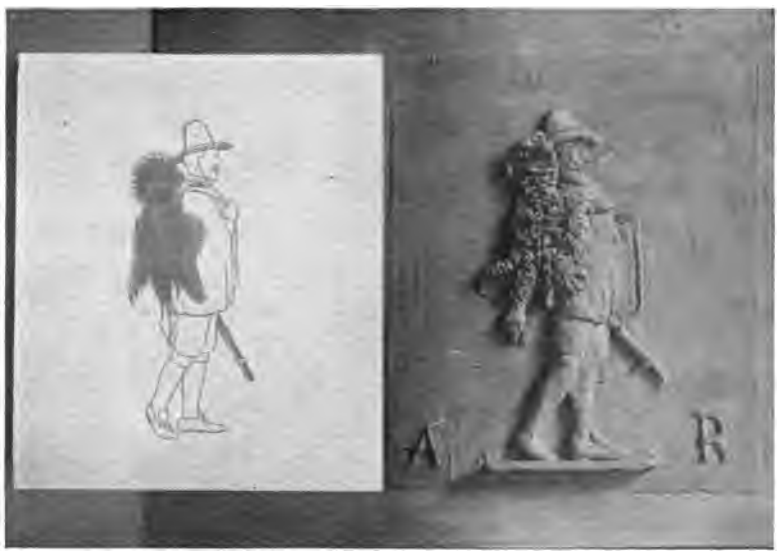

FIG. 3. — Puritan and Wild Turkey.

each means of expression strengthens the other. For a large part of the year the same outlines of lessons may serve perfectly well for both studies, to their mutual advantage. Language work gives suggestions for and is helped by the modelling. Young children show great ingenuity and imagination in expressing ideas gained from descriptions and stories.

Children also gain much ability in expressing form

by modelling from pictures. It is then necessary for them to translate light and shade into actual relief. (Fig. 3.)

MODELLING IN THE UPPER GRADES

FOURTH TO EIGHTH YEAR IN SCHOOL

INTEREST in modelling appears to increase as children grow older and develop more ability to represent their ideas and observations. Teachers report that there is no other lesson period of such quietness and application as that devoted to modelling. Because of this interest, the difficulty of handling large classes is reduced to the minimum.

The children should learn how to lay a background upon the boards, pressing out the material with their thumbs till it is evenly distributed over the surface. The background should be about as thin as cardboard. Upon this the figures can be placed if they are modelled in the round. If they are to be in relief, they should be sketched upon the background with a pointed stick and then built up by the addition of more material and shaped to the desired form. An occasional demonstration lesson in which the children follow the teacher one step at a time as he builds up a form is helpful. The most valuable instruction in technique however, is usually given incidentally. Children readily imitate ways of doing things while formal instruction as to how to do them is often a waste of time. The most effectual way of developing right habits of handling plastic material is to awaken a clear idea of the shape desired and let it act directly

as stimulus. Whatever additional technical instruction is necessary can easily be given incidentally as the needs of the lesson suggest. The following general divisions of the subject include work appropriate for pupils from nine to fourteen years of age.

I. MODELLING FROM OBJECTS. — Representation of the shape and characteristics of particular objects present at the time. This develops close observation of the facts at hand.

II. MODELLING FROM MEMORY. — Representation from what can be recalled of objects and incidents that have been seen and which may require repeated reference to the original or similar objects to verify results or secure more data. This develops power to memorize and visualize form.

III. MODELLING FROM IMAGINATION. — Representation of objects or incidents about which the pupils have heard or read, or with the details of which they are sufficiently familiar so they can build up their own versions. This develops constructive imagination.

IV. DESIGN.

The following general order of lessons for these topics has proved successful.

I. Modelling directly from objects, such as toys, fruits, leaves, flowers, or anything that may be suitable; for example, an apple modelled in the round.

(*a*) Model the apple roughly, studying its general shape and proportions.

(*b*) Study characteristics of shape which are determined by the kind of apple and which mark it as that kind, *e.g.*, Baldwin, Russet, Greening, etc., and also the individual features of the particular apple, its creases, hollows, stem, etc.

(*c*) Complete the modelling, making as accurate a portrait of the particular apple as possible. Show the texture of the surface and details of shape.

If the object, for example a leaf, is to be modelled

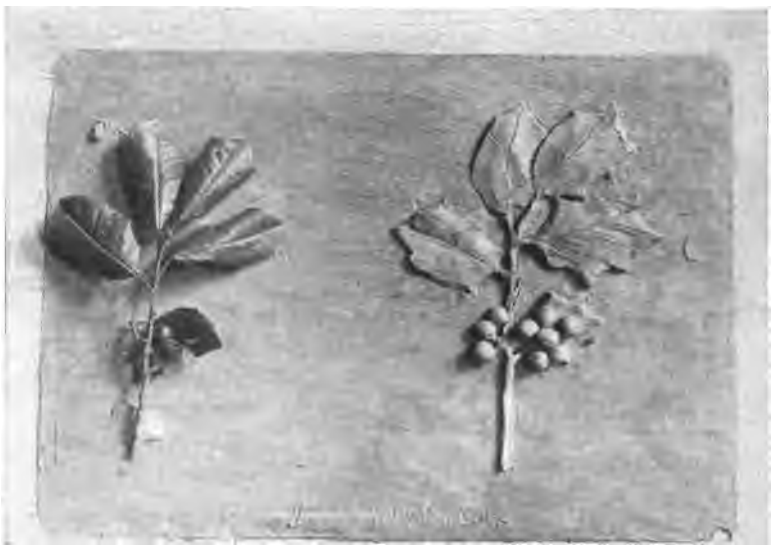

FIG. 4. — Holly Plant.

in relief, it should be laid in a position like that in which it is to be represented. The shape should then be drawn upon the thin prepared background and the form built up so as to show heights and surfaces and general shape corresponding to those of the real leaf. The details of form may then be carried as far as desired. (Figs. 4 and 5.)

If children spend too much time over small details, some practice in rapidly suggesting the general form of things, within a limited time, will be found helpful in

developing vigor of handling and an appreciation of the essential elements. Allow the children only a short time, perhaps four minutes, in which to represent as much

FIG. 5. — Flower.

as they can of the appearance of a leaf, then another equal length of time for another leaf of different size or form. If, on the other hand, the work is too vague and crude, practice in exact representation of a part of an object will help to give definiteness and precision

to the work. The best results are obtained when rapid work in general shapes is balanced by careful study of details. After the older children have represented the general form of a leaf and have worked out the details as well as they are able, they may

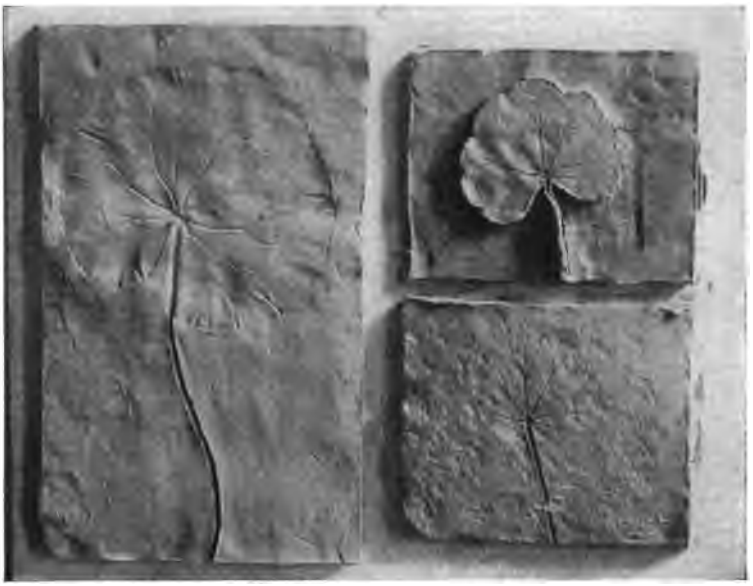

FIG. 6. — Leaf Impressions.

often be awakened to better appreciation of its structure and the refinement of its outline, and receive an incentive for more careful work upon their own model, by taking impressions of leaves like those they are modelling.

This is done as follows (see Fig. 6).

Prepare a flat surface of modelling material, making it very smooth by pressing it out with the fingers,

placing a thin sheet of paper upon it and rolling it out with a roller or rubbing it; then polish with the fingers.

Place upon the surface a leaf or spray and press it gently into the material. Thick, heavy leaves give the best impressions. Place upon this a piece of

FIG. 7. — Common Objects.

paper or cloth and press and rub over the whole. When the leaves are removed their impression will be left with each detail clearly defined. Plaster casts may easily be made from these leaf impressions. Children will learn much regarding the exact shapes of leaves by carefully cutting away the material around the impressions and leaving the shape in relief. This necessitates following the form exactly. Actually to

follow a form with the hand gives a clearer idea of its structure than simply to look at it.

Common objects, such as implements, utensils, and furniture, are subjects for representation which are always of interest to the children. (Fig 7.)

Animals and birds are suitable forms to model. They are full of interest to the children and give opportunity for valuable practice in expressing action, pose, and vitality. Excellent casts of animal forms are available at reasonable prices and are appropriate ornaments for schoolrooms apart from their value as models. Among the best of these are the animals and birds by Barye, Frémiet, and others. The list of these casts includes rabbits, geese, poultry, elephants, bears, horses, lions, tigers, etc. These forms are exquisitely modelled and are full of action. It is excellent practice to let lessons in modelling from such casts be followed immediately by representation of the same thing from memory, or from nature if the living animal is available.

Some modelling directly from objects in order to represent particular forms with accuracy is always to be desired. Its relative value to young children, in comparison with work from memory and imagination, has, however, often been overestimated. Its value in primary grades is small, but increases with advancing maturity. The number of lessons which can with profit be devoted to a single object also increases with the age and development of the children. Well-chosen casts which show how sculptors handle plastic material are always excellent subjects from which to work.

II. Modelling from memory such forms as have

been previously modelled directly from objects: also things which are not at hand but seen occasionally, such as particular buildings and localities, ships and vehicles, shapes of trees, etc, in relief and in the round; for example, modelling in relief from memory a certain building with which the children are familiar.

FIG. 8. — Horse.

(*a*) Discuss with the children the point of view from which the building is to be represented, and have them see it from that point before the lesson.

Sketch the building upon the prepared background and model the general shape and proportions. Let the pupils compare and discuss results.

(*b*) Before the next lesson observe the building again and make sketches to use as data. The number of lessons which may well be spent upon one object can be judged by the interest of the children in gathering additional details and applying these to the perfecting of their model. Such training develops

ability to image form clearly and retain it in the memory.

The advantage of studying and reproducing maps in this way is readily apparent. The resulting knowledge is more permanent than when the modelling is made always with the map in sight. Modelling maps of familiar localities where the proportions of parts may be observed and estimated several times

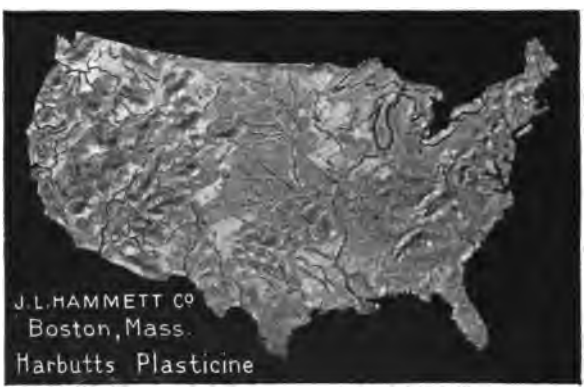

FIG. 9. — Relief Map.

before the work is completed gives excellent training to the sense of scale and relative proportions. (Fig 9.)

Street maps of well-known localities may be made by indicating some starting-point as the schoolhouse or the child's home and gradually extending the routes therefrom. These may be added to, reshaped and brought into proper proportions and the buildings and trees indicated. If such maps are made on cardboard or paper they will not monopolize the boards and may be kept and worked on for some time. Under

skilful instruction, interest in estimating distances and gathering information which may be used in perfecting the maps increases. Often groups of children work on different maps, each group studying some

FIG. 10. — The Ship.

particular locality. In modelling, altitudes as well as areas may be represented.

Progressive study of some topic such as boats or vehicles is of great value. The interest of the children in different forms of construction and in various methods of representing certain effects, such as the varying appearances of the surface of water, is aroused. An area may be made to represent a bay, and in this the children may place models of different craft they

have observed; or, on a roadway, they may put representations of all sorts of vehicles.

III. Modelling from descriptions or imagination such subjects as occupations, games, incidents; for example, The Blacksmith, The Fisherman, The Car-

FIG. 11. — Circus.

penter, A Rainy Day, The Circus, A Street Scene, Indian Life, The Esquimaux, Mound Builders, Ships of Columbus, The Vikings, Santa Claus, etc., etc. An interest in and a vivid idea of the subject, gained by recent experience or study, are requisites for successful work. With these as a stimulus the pupils will model the subject with surprising detail and variety of expression. Free use of pictures, descriptions, and sto-

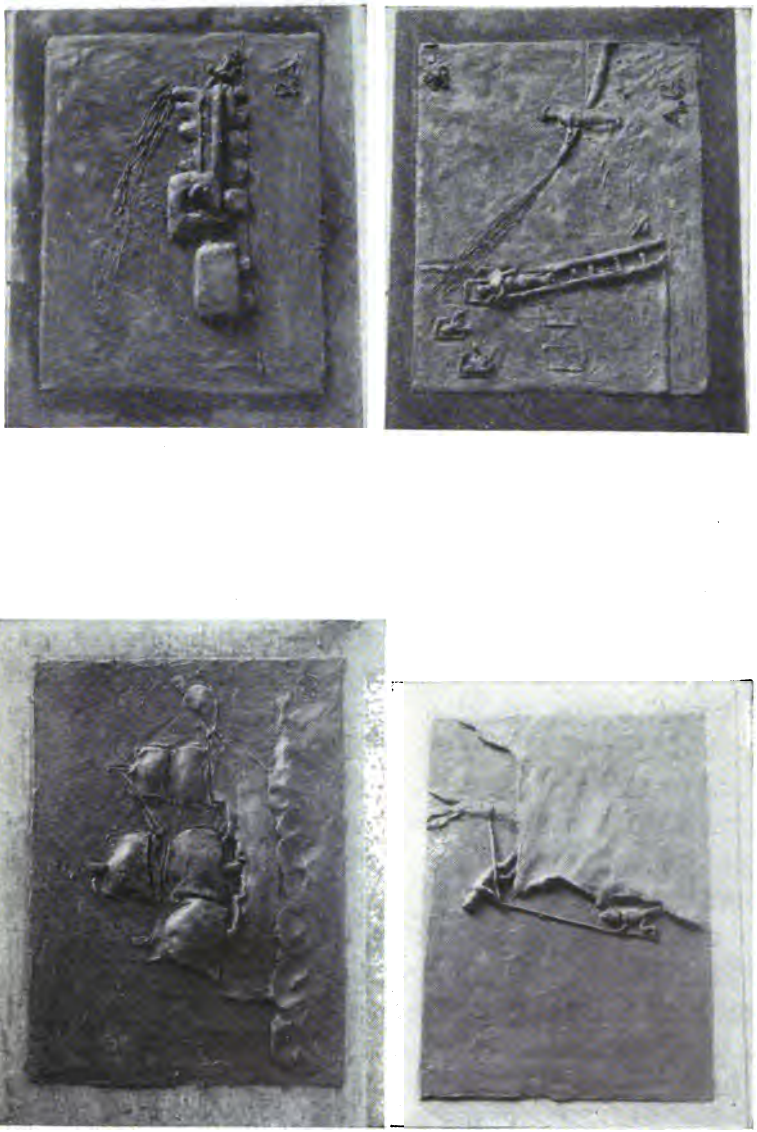

FIG. 12. — Illustrative Sketches.

ries, and if possible renewed experiences, will furnish material and suggestions for perfection of the work. In order to prevent the imaginative work from becoming careless regarding the correct rendering of form and structure, it is important that it be taken in connection with careful work from objects. Usually the subject itself will furnish material for this. For example, in a series of lessons on the Esquimaux, a lesson on the careful representation from an object, model, or picture of something included in the scene, such as a sledge, harpoon, dog, etc., will give the needed facts.

If the subject is carried on by groups of children, where four or five work together on one scene, each may make a special study of a particular object and collect material for it.

IV. Design. — The subjects chosen should be such as are suitable to be worked out first in plastic material, to be kept in that material or to be reproduced in wood, stone, metal, etc. Appropriate designs are these for pottery, tiles, tablets, monograms, seals, wood or stone carving, etc. Good design is something more than the aggregation and symmetrical arrangement of random shapes, and it is almost never the spontaneous product of an untrained mind. It is an evolution from ideas and images of good form gathered from many sources. The sort of originality that results from the attempts of an uninformed mind to produce design is of little value to the producer. A background of ideas is not a hindrance to progressive originality. When undertaking to design a thing children should be shown excellent examples of design

for that sort of thing and should be encouraged to find and collect illustrations. The presence of a single example at the time of a lesson would probably influence toward a habit of copying, while the previous collecting of many examples, followed by the selection of the best, awakens ideas and exercises the sort of judgment that aids invention. The problem of producing a given design is greatly simplified by limiting it to certain elements. For example, in pottery the shape of the jar or vase is in itself a sufficient problem. If more is desired, simple lines or borders which follow the suggestions offered by the form are all that should be attempted by the beginners. (Fig 13.) The addition of extraneous matter such as flower or animal forms applied to but not suggested by the surface undermines taste and leads children to mistake superficial attraction for beauty. The same principle should apply to designing of tiles, tablets, etc.

The following steps are suggested for the first design for a tile. Discuss the use of tiles, show good examples, and decide upon the most appropriate size. Limit the amount of decoration to one element of ornamentation; for example, a border line. With sticks and splints, or with drawings; decide how much margin should be allowed outside the border line. Experiment to see whether a narrow or broad line looks best. Modify the line at the corners to make a pleasing accent at these points. Work over the suggestions thus obtained till this ornament is the best for its kind that can be made by the pupils. (Fig. 14.)

In making a tablet the first step is to decide upon suitable size and shape. Appropriate spaces for the

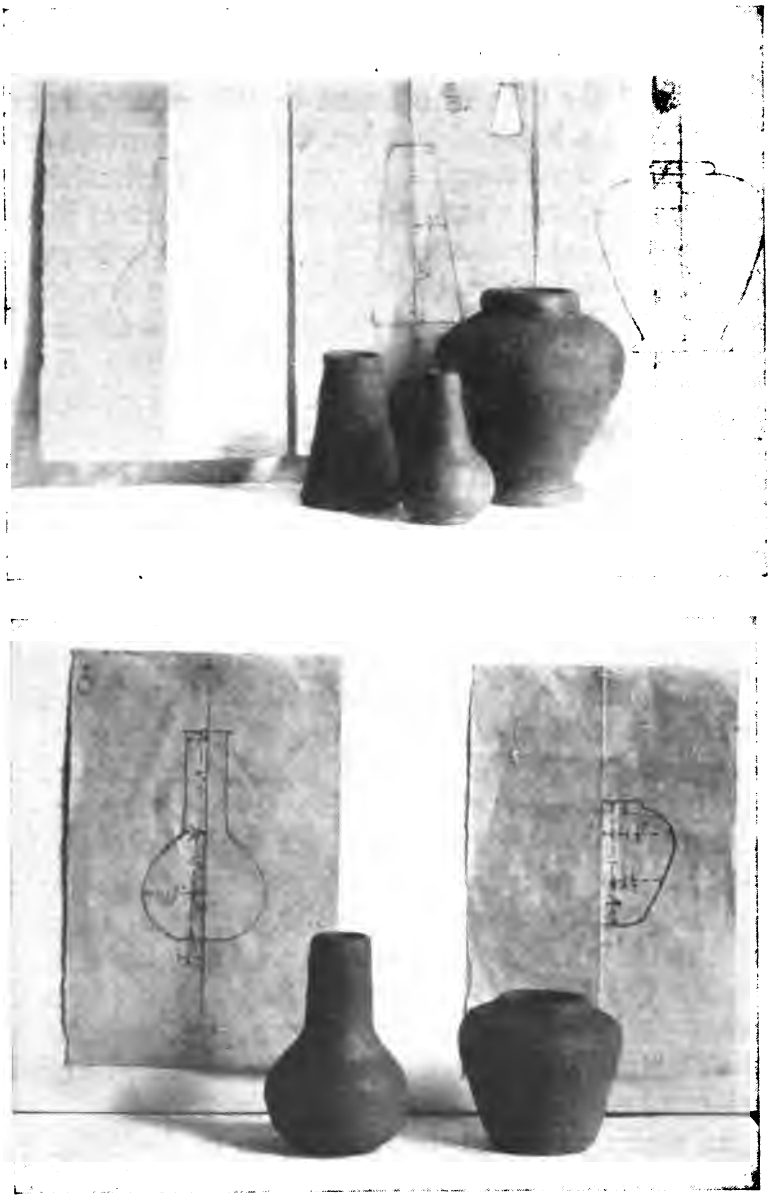

FIG. 13. — Pottery.

lettering should then be chosen, so that the relations of spaces and margins shall be pleasing. The letters should then be spaced so as to conform to the plan. The steps suggested for lessons in design may be summarized as follows:

1. Discussion of the size and shape most appropriate for the use of the object.

2. Planning of the necessary parts so that they make as pleasing divisions of the whole shape as possible.

3. Addition of such decoration as the shape and structure and use of the object may suggest as appropriate.

The first two steps are the most important. The third should not be undertaken till these have contributed as much as possible. It will be found that they offer by far the greater opportunities for embodying beauty in the object and training the taste of the pupil. For instance, most of the beauty of a lettered tablet consists, first, in the relation of the masses of printing and of the margins to the whole shape, and secondly in the spacing of the words and letters within the block which they occupy. The ornamentation of individual letters is a secondary matter and generally results in more loss than profit to the beginner.

PLASTER CASTS

The following directions are for making casts of forms in relief where there is no undercutting to bind the cast into the mould and prevent it from being removed when the plaster has set.

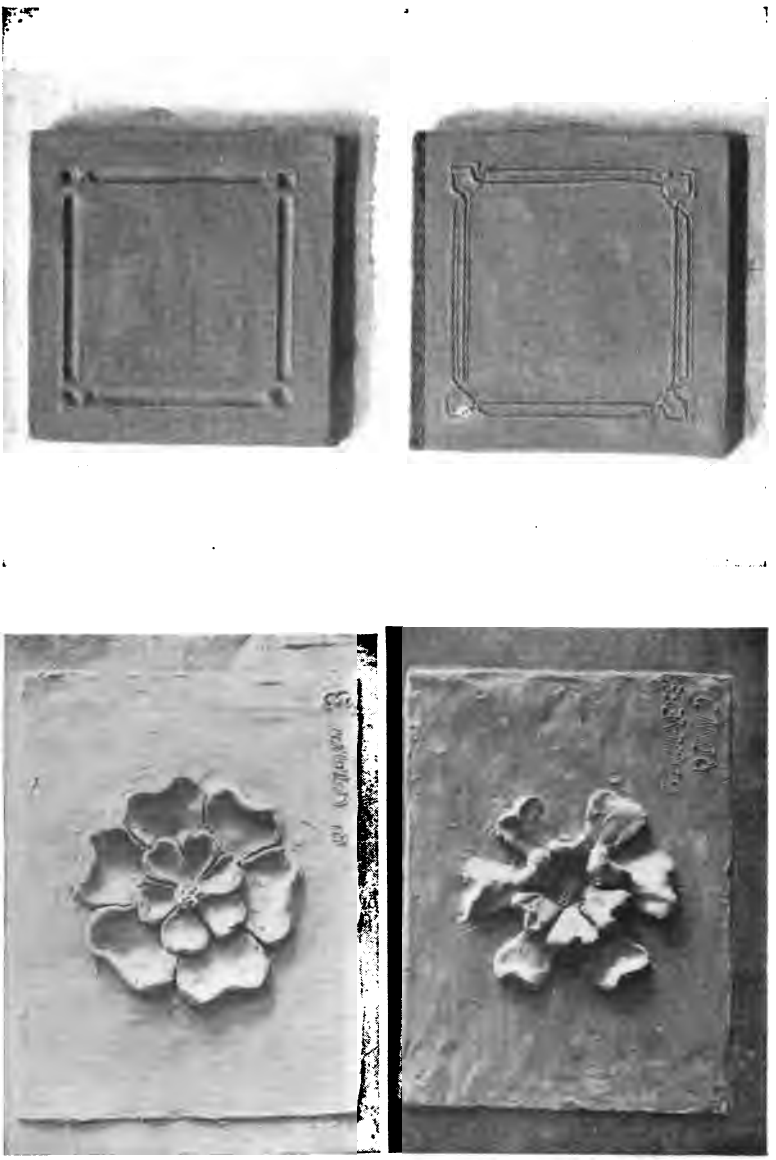

FIG. 14. — Tiles.

Arrange strips of cardboard or flat boards on edges upon the four sides of the model so as to form a frame within which the plaster may be poured and which shall determine the edges of the cast. Make the corners water-tight. Modelling material serves well for this purpose. Sprinkle plaster of Paris into water and stir till the mixture is about the consistency of cream. Pour this upon the model till it is covered. Brush the mixture into all details and fill up the mould. Shake it slightly to make sure that the plaster fills all parts. Leave it to harden. All utensils should be washed at once before the plaster sets.

After an hour or so, remove the edges and the plaster may be easily separated from the model. This forms the mould.

To make the cast, soak the mould if it has become very dry, brush it clean with soap and water and remove all suds with a soft sponge. Brush the surface very thinly with a little sweet oil. Arrange the frame about the mould. Pour in the plaster mixed thin and let it harden. When it has set, insert a thin flat bladed knife between the cast and the mould at the four edges. Tap it gently and the two will separate easily. This method is possible only when there is no undercutting to lock the mould and the cast together. Waste and piece moulds are usually too difficult to undertake in elementary schools. Often some one may be found in the vicinity who will make casts of different pieces or will show the older children how to make them at home. The enthusiasm and interest of a class is greatly increased by the preservation of a few specimens.

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